

CLAIMS

What is claimed is:

1. In a content bank system comprising at least one digital identity instance representative of at least one object, a method for adding object-related information regarding an object of the at least one object to the content bank system, the method comprising:

receiving, from a source by a digital identity instance corresponding to the object, the object-related information targeted to a service;

determining, via a services registry associated with the digital identity instance, whether the service targeted by the object-related information exists;

when the service targeted by the object-related information exists, sending the object-related information to the service; and

processing the object-related information by the service such that the object-related information is subsequently available via the content bank system.

2. The method of claim 1, wherein the object-related information is received via at least one access mode of a multi-mode interface available to the digital identity instance.

3. The method of claim 2, wherein the at least one access mode comprises any of: a Simple Object Access Protocol-based access mode, a voice-based mode, a text-based access mode, and an Instant Messaging-based access mode.

4. The method of claim 1, further comprising:
determining, via the services registry, location information regarding the service;
and
sending the object-related information to the service based on the location information.

5. The method of claim 4, wherein the location information corresponds to another content bank system.

6. The method of claim 1, wherein the source of the object-related information is any of: the object, another content bank system, another object, a manufacturer of the object, an owner of the object, and a provider of service to the object.

7. The method of claim 1, further comprising:
verifying access rights of the source to provide the object-related information associated with the object to the content bank system.

8. In a content bank system comprising at least one digital identity instance representative of at least one object, a method for providing object-related information regarding an object of the at least one object to a third party, the method comprising:

determining, by a digital identity instance corresponding to the object, the object-related information should be provided to the third party;

determining, via a services registry associated with the digital identity instance, whether a service associated with the object-related information exists;

when the service targeted by the object-related information exists, accessing the object-related information via the service; and

sending, by the service, the object-related information to the third party.

9. The method of claim 8, wherein determining the need to provide the object-related information to the third party further comprises receiving a request for the object-related information from the third party, wherein the request specifies the third party as the destination for the object-related information.

10. The method of claim 9, wherein the third party is any of: the object, another content bank system, another object, a manufacturer of the object, an owner of the object, and a provider of service to the object.

11. The method of claim 9, wherein the request is received from the third party via at least one access mode of a multi-mode interface available to the digital identity instance.

12. The method of claim 11, wherein the wherein the at least one access mode comprises any of: a Simple Object Access Protocol-based access mode, a voice-based mode, a text-based access mode, and an Instant Messaging-based access mode.

13. The method of claim 8, wherein determining the need to provide the object-related information to the third party further comprises receiving a request for the object-related information from another third party, wherein the request specifies the third party as the destination for the object-related information.

14. The method of claim 13, wherein the third party or the other third party is any of: the object, another content bank system, another object, a manufacturer of the object, an owner of the object, and a provider of service to the object.

15. The method of claim 13, wherein the request is received from the other third party via at least one access mode of a multi-mode interface available to the digital identity instance.

16. The method of claim 15, wherein the wherein the at least one access mode comprises any of: a Simple Object Access Protocol-based access mode, a voice-based mode, a text-based access mode, and an Instant Messaging-based access mode.

17. The method of claim 8, wherein determining the need to provide the object-related information to the third party further comprises detecting a condition requiring the object-related information to be pushed to the third party.

18. The method of claim 17, further comprising:

receiving, by the digital identity instance from the third party, a subscription request for the object-related information,

wherein the object-related information is pushed to only those third parties that have submitted a subscription request.

19. The method of claim 8, further comprising:
determining, via the services registry, location information regarding the service;
and
accessing the object-related information via the service based on the location information.

20. The method of claim 19, wherein the location information corresponds to another content bank system.

21. The method of claim 8, further comprising:
verifying access rights of the third party to the object-related information; and
sending the additional object-related information to the third party when the third party possesses access rights to the object-related information.

22. The method of claim 8, further comprising:
prior to sending the object-related information to the third party, processing the object-related information into a form suitable for sending the object-related information to the third party.

23. The method of claim 8, wherein the object-related information comprises a pointer to additional object-related information.

24. In a content bank system comprising at least one digital identity instance representative of at least one object, a method for manipulating object-related information regarding an object of the at least one object, the method comprising:

determining, via a services registry associated with a digital identity instance corresponding to the object, whether a service associated with the object-related information exist;

when the service associated with the object-related information exists, accessing the object-related information via the service;

modifying the object-related information to provide modified object-related information; and

sending the modified object-related information to the service such that the modified object-related information is subsequently available via the content bank system.

25. The method of claim 24, further comprising:

determining, via the services registry, location information regarding the service;

accessing the object-related information via the service based on the location information; and

sending the modified object-related information to the service based on the location information.

26. The method of claim 25, wherein the location information corresponds to another content bank system.

27. In a content bank system comprising at least one digital identity instance representative of at least one object, a method for communicating with an object of the at least one object, the method comprising:

establishing a first communication channel between the object and a digital identity instance within the content bank system corresponding to the object;

establishing, via at least one access mode of a multi-mode interface, a second communication channel between a third party and the digital identity instance; and

communicating, by the third party via the first and second communication channels and the digital identity instance, with the object.

28. The method of claim 27, wherein the at least one access mode comprises any of: a Simple Object Access Protocol-based access mode, a voice-based mode, a text-based access mode, and an Instant Messaging-based access mode.

29. The method of claim 27, wherein communicating with the object further comprises:

receiving, at the content bank system, first object-related information from the object;

sending, by the content bank system, the first object-related information to the third party;

receiving, by the content bank system, second object-related information from the third party in response to the first object-related information; and

sending, by the content bank system, the second object related information to the object.

30. The method of claim 27, wherein communicating with the object further comprises:

receiving, at the content bank system, first object-related information from the third party;

sending, by the content bank system, the first object-related information to the object;

receiving, by the content bank system, second object-related information from the object in response to the first object-related information; and

sending, by the content bank system, the second object related information to the third party.

31. The method of claim 27, wherein communicating with the object further comprises:

verifying access rights of the third party to provide object-related information associated with the object to the content bank system.

32. The method of claim 27, wherein communicating with the object further comprises:

verifying access rights of the third party to receive object-related information associated with the object from the content bank system.

33. The method of claim 27, wherein the third party is any of: the object, another content bank system, another object, a manufacturer of the object, an owner of the object, and a provider of service to the object.

34. In a content bank system comprising at least one digital identity instance representative of at least one object, a method of associating contextual information with discrete components of object-related information, the method comprising:

accessing, by a digital identity instance associated with an object, a first discrete component of object-related information from a first data source; and

adding, by the digital identity instance, object-specific contextual information to the first discrete component of object-related information to provide first enhanced object data.

35. The method of claim 34, wherein accessing the first discrete component of object-related data further comprises receiving at least one attribute of the object.

36. The method of claim 34, wherein the first data source is any of: the object, another content bank system, another object, a manufacturer of the object, an owner of the object, and a provider of service to the object.

37. The method of claim 34, further comprising:

assigning, by the digital identity instance, access rights to the first enhanced object data.

38. The method of claim 34, further comprising:

assigning, by the digital identity instance, usage rules to the first enhanced object data.

39. The method of claim 34, further comprising:

encoding, by the digital identity instance, the first enhanced object data with a standardized markup language.

40. The method of claim 39, wherein the markup language comprises Extensible Markup Language.

41. The method of claim 34, further comprising:

accessing a second discrete component of object-related information from a second data source;

adding, by the digital identity instance, object-specific contextual information to the second discrete component of object-related information to provide second enhanced object data; and

aggregating, by the digital identity instance, the first enhanced object data and the second enhanced object data according to at least one aggregation rule to provide aggregated data.

42. The method of claim 41, further comprising:

sending, by the digital identity instance, the aggregated data to at least one third party.

43. A content bank system comprising at least one digital identity instance representative of at least one object device, the system comprising:

at least one processor; and

memory, coupled to the at least one processor, comprising computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

receive, from a source by a digital identity instance corresponding to an object, object-related information targeted to a service;

determine, via a services registry associated with the digital identity instance, whether the service targeted by the object-related information exists;

send the object-related information to the service when the service targeted by the object-related information exists; and

process the object-related information by the service such that the object-related information is subsequently available via the content bank system.

44. The system of claim 43, wherein the memory further comprises computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

determine, via the services registry, location information regarding the service; and

send the object-related information to the service based on the location information.

45. The system of claim 43, wherein the memory further comprises computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

verify access rights of the source to provide the object-related information associated with the object to the content bank system.

46. A content bank system comprising at least one digital identity instance representative of at least one object device, the system comprising:

at least one processor; and

memory, coupled to the at least one processor, comprising computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

determining, by a digital identity instance corresponding to the object, the need to provide the object-related information to the third party;

determining, via a services registry associated with the digital identity instance, whether a service associated with the object-related information exists;

when the service targeted by the object-related information exists, accessing the object-related information via the service; and

sending, by the service, the object-related information to the third party.

47. The system of claim 46, wherein the memory further comprises computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

receive a request for the object-related information from the third party, wherein the request specifies the third party as the destination for the object-related information.

48. The system of claim 46, wherein the memory further comprises computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

receive a request for the object-related information from another third party, wherein the request specifies the third party as the destination for the object-related information.

49. The system of claim 46, wherein the memory further comprises computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

detect a condition requiring the object-related information to be pushed to the third party.

50. The system of claim 46, wherein the memory further comprises computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

determine, via the services registry, location information regarding the service;
and

access the object-related information via the service based on the location information.

51. The system of claim 46, wherein the memory further comprises computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

- verify access rights of the third party to the object-related information; and
- send the additional object-related information to the third party when the third party possesses access rights to the object-related information.

52. A content bank system comprising at least one digital identity instance representative of at least one object device, the system comprising:

- at least one processor; and
- memory, coupled to the at least one processor, comprising computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:
 - determine, via a services registry associated with a digital identity instance corresponding to an object, whether a service associated with object-related information exist;
 - access the object-related information via the service when the service associated with the object-related information exists;
 - modify the object-related information to provide modified object-related information; and
 - send the modified object-related information to the service such that the modified object-related information is subsequently available via the content bank system.

53. The system of claim 52, wherein the memory further comprises computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

- determine, via the services registry, location information regarding the service;

access the object-related information via the service based on the location information; and

send the modified object-related information to the service based on the location information.

54. A content bank system comprising at least one digital identity instance representative of at least one object device, the system comprising:

at least one processor; and

memory, coupled to the at least one processor, comprising computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

establish a first communication channel between an object and a digital identity instance within the content bank system corresponding to the object; and

establish, via at least one access mode of a multi-mode interface, a second communication channel between a third party and the digital identity instance,

wherein the third party communicates with the object via the content bank system and the first and second communication channels.

55. The system of claim 54, wherein the memory further comprises computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

verify access rights of the third party to provide object-related information associated with the object to the content bank system.

56. The system of claim 54, wherein the memory further comprises computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

verify access rights of the third party to receive object-related information associated with the object from the content bank system.

57. A content bank system comprising at least one digital identity instance representative of at least one object device, the system comprising:

at least one processor; and

memory, coupled to the at least one processor, comprising computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

access, by a digital identity instance associated with an object, a first discrete component of object-related information from a first data source; and

add, by the digital identity instance, object-specific contextual information to the first discrete component of object-related information to provide first enhanced object data.

58. The system of claim 57, wherein the memory further comprises computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

assign, by the digital identity instance, access rights to the first enhanced object data.

59. The system of claim 57, wherein the memory further comprises computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

assign, by the digital identity instance, usage rules to the first enhanced object data.

60. The system of claim 57, wherein the memory further comprises computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

encode, by the digital identity instance, the first enhanced object data with a standardized markup language.

61. The system of claim 57, wherein the memory further comprises computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

access a second discrete component of object-related information from a second data source;

add, by the digital identity instance, object-specific contextual information to the second discrete component of object-related information to provide second enhanced object data; and

aggregate, by the digital identity instance, the first enhanced object data and the second enhanced object data according to at least one aggregation rule to provide aggregated data.

62. The system of claim 61, wherein the memory further comprises computer-executable instructions that, when executed by the at least one processor, cause the at least one processor to:

send, by the digital identity instance, the aggregated data to at least one third party.

63. A computer-implemented content bank system for use in processing object-related information regarding at least one object, comprising:

at least one identity module that, when invoked, provides a digital identity instance corresponding to an object; and

at least one content module that, when invoked by the digital identity instance, processes object-related information associated with the object.

64. The system of claim 63, wherein the at least one identity module comprises a service registry module that administers a listing of all services available to the digital identity instance.

65. The system of claim 63, wherein the at least one identity module comprises a profile module that administers information descriptive of the object.

66. The system of claim 63, wherein the at least one identity module comprises a usage module that administers information regarding usage of the object.

67. The system of claim 63, wherein the at least one identity module comprises a maintenance module that administers information regarding maintenance operations performed on the object.

68. The system of claim 63, wherein the at least one identity module comprises a health module that administers information regarding condition of the object.

69. The system of claim 63, wherein the at least one identity module comprises a location module that administers information regarding a location of the object.

70. The system of claim 63, wherein the at least one identity module comprises a schedule module that administers information regarding future assignments of the object.

71. The system of claim 63, wherein the at least one identity module comprises a family module that administers information regarding relationships between the object and other objects.

72. The system of claim 63, wherein the at least one identity module comprises a security module that administers information regarding any of: data sharing rules, user rules and access rights.

73. The system of claim 63, wherein the at least one identity module comprises an alerts module that administers communication between modules of the at least one identity module.

74. The system of claim 73, wherein the alerts module administers communications between the digital identity instance and third parties external to the content bank system.

75. The system of claim 63, wherein the at least one content module comprises a translation module for converting the object-related information to a common representation format.

76. The system of claim 63, wherein the at least one content module comprises a rendering module for determining a format for sending the object-related information to a third party.

77. The system of claim 63, wherein the at least one content module comprises a transformation module for adding contextual information to the object-related information.

78. The system of claim 63, wherein the at least one content module comprises an aggregation module that aggregates the object-related information with other object-related information corresponding to other objects.